

CLAIMS

1. A method for preparing a copolymer containing succinimide moieties, which comprises, polymerizing aspartic acid in the presence of an end-capping initiator to form the copolymer.
2. The method of Claim 1, wherein said end-capping initiator is selected from the group consisting of an anhydride, a carboxylic acid and an amine.
3. The method of Claim 1, wherein said anhydride is selected from the group consisting of succinic anhydride, phthalic anhydride, maleic anhydride, alkenyl succinic anhydride, 1,2,4-benzenetricarboxylic anhydride; cis-1,2,3,6-tetrahydrophthalic anhydride and 1,2-cyclohexane dicarboxylic anhydride.
4. The method of Claim 1, wherein said carboxylic acid is selected from the group consisting of benzoic acid, thio succinic acid and terephthalic acid.
5. The method of Claim 2, wherein said amine is represented by the formula RR_1NH , where R, and R_1 , are the same or different radicals selected from the group consisting of an alkyl, a substituted alkyl, an alkenyl, an aryl, aryl-alkyl, and a substitute aryl radical.
6. The method of Claim 5, wherein said alkyl is selected from the group consisting of a methyl, an ethyl, a *n*-propyl, an isopropyl, a *n*-butyl, an isobutyl, a *sec*-butyl, a *n*-amyl, an isoamyl, a *n*-hexyl, a *n*-octyl, a capril, a *n*-decyl, a lauryl, a myristyl, a cetyl, and a stearyl.
7. The method of Claim 5, wherein said substituted alkyl is hydroxyethyl.
8. The method of Claim 5, wherein said alkenyl is allyl.
9. The method of Claim 5, wherein said aryl is phenyl.
10. The method of Claim 5, wherein said aryl-alkyl is benzyl.
11. The method of Claim 5, wherein said substituted aryl is selected from the group consisting of an alkylphenyl, a chlorophenyl and a nitrophenyl.
12. The method of Claim 2, wherein said amine is selected from the group consisting of an aliphatic amine, an aliphatic diamine, an aliphatic

hydroxylamine, an aminoethoxylate, an aromatic amine, and an aromatic diamine.

13. The method of Claim 12, wherein said aliphatic amine is selected from the group consisting of methylamine, dimethylamine, ethylamine, diethylamine, n-propylamine, di-n-propylamine, n-butylamine, n-amylamine, n-hexylamine and laurylamine.
14. The method of Claim 12, wherein said aliphatic diamine is selected from the group consisting of ethylenediamine, trimethylenediamine, tetramethylenediamine, pentamethylenediamine, hexamethylenediamine.
15. The method of Claim 12, wherein said aliphatic hydroxylamine is selected from the group consisting of ethanolamine, diethanolamine and triethanolamine.
16. The method of Claim 12, wherein said aromatic amine is selected from the group consisting of methylaniline, dimethylaniline, diethylaniline, o-toluidine, m-toluidine and p-toluidine.
17. The method of Claim 12, wherein said aromatic diamine is selected from the group consisting of o-phenylenediamine, m-phenylenediamine and p-phenylenediamine.
18. The method of Claim 1, wherein said copolymer contains an anhydride end group.
19. The method of claim 18, herein said anhydride reacts with a nucleophile.
20. The method of Claim 19, wherein said nucleophile selected from the group consisting of an aminoethoxylate, a hydrophobic amine, a hydroxyl terminated materials a poly(vinyl alcohol), a polyester, a polyamide, a polysaccharide, a dextan, a cellulose, a protein, a dye and a UV absorber.
21. The method of Claim 20, wherein said polysaccharide is starch.
22. The method of Claim 1, wherein said polymerization is carried out in a medium selected from the group consisting of a solvent, a supercritical fluid.

23. The method of Claim 1, wherein said polymerization is carried out in the molten phase or in the solid phase.
24. The method of Claim 1, wherein said copolymer is a prepolymer.
25. The method of Claim 24, wherein said prepolymer exhibits a weight average molecular weight of from 100 to 1,000 Daltons.
26. The method of Claim 24, wherein said prepolymer is further polymerized by a method selected from the group consisting of thermal process, a supercritical fluid process, in the molten phase and in the solid phase.
27. The method of Claim 1, wherein said end-capping initiator and said aspartic acid are present in a ratio of from 1:1 to 1:10.
28. The method of Claim 1, wherein said end-capping initiator and said aspartic acid are present in a ratio of from 1:1 to 1:5.
29. The method of Claim 1, further comprising a monomer selected from the group consisting of an aminoacid, a hydroxy acid, a combination of a diamine with a dicarboxylate and a combination of a diol with a carboxylate.
30. The method of Claim 1, wherein said copolymer is an oligomer.
31. The method of Claim 1, wherein said derivative exhibits a weight average molecular weight of from 1,000 to 150,000.
32. The method of Claim 1, wherein said derivative exhibits a weight average molecular weight of from 1,000 to 10,000.
33. The method of Claim 30, wherein said oligomer undergoes chain extension in an extruder.
34. The method of Claim 1, wherein a succinimide moiety of said copolymer reacts with a material selected from the group consisting of an aminoethoxylate, a hydrophobic amine and a hydroxyl terminated material to form a graft copolymer.
35. The method of Claim 1, wherein an anhydride end of said copolymer further reacts with a primary or secondary amine.

36. The method of Claim 1, wherein said polymerization is carried out in the presence of a stabilizer.
37. The method of Claim 36, wherein said stabilizer is selected from the group consisting of a thermal stabilizer, an antioxidant and a mixture thereof.
38. A method for preparing a copolymer of L-aspartic acid, which comprises, polymerizing aspartic acid in the presence of an end-capping initiator and a catalyst to form the copolymer of L-aspartic acid.
39. The method of Claim 38, wherein said catalyst is selected from the group consisting of phosphoric acid, a Lewis acid and an organometallic catalyst.
40. The method of Claim 39, wherein said organometallic catalyst is tin octanoate.
41. The method of Claim 1, wherein said copolymer is isolated and blended with a polymer additive.
42. The method of Claim 1, wherein said polymer additive is selected from the group consisting of a stabilizer, an antioxidant, a hindered phenol, an amine, a phosphite, a thioester, a sulfite, a metal salt of a dithioacid, a colorant, a plasticizer, a reinforcing agent and a lubricant.
43. An article prepared by processing the derivative of Claim 1.
44. The article of Claim 43, wherein said processing is selected from the group consisting of extrusion, injection molding, blow molding and calendering.